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Practitioner's Docket No. U 012964-2



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PATENT TRADEMARK OFFICE

CHAPTER II

**TRANSMITTAL LETTER
TO THE UNITED STATES ELECTED OFFICE (EO/US)**

(ENTRY INTO U.S. NATIONAL PHASE UNDER CHAPTER II)

PCT/GB99/00938	March 25, 1999	March 27, 1998
INTERNATIONAL APPLICATION NO. CLAIMED	INTERNATIONAL FILING DATE	PRIORITY DATE

ACOUSTIC HORN
TITLE OF INVENTION

Dominic LE PREVOST
APPLICANT(S)

Box PCT
Assistant Commissioner for Patents
Washington D.C. 20231
ATTENTION: EO/US

NOTE: *The completion of those filing requirements that can be made at a time later than 30 months from the priority date results from the Commissioner exercising his judgment under the authority granted under 35 USC 371(d). The filing receipt will show the actual date of receipt of the last item completing the entry into the national phase. See 37 C.F.R. §1.491 which states: "An international application enters the national state when the applicant has filed the documents and fees required by 35 USC 371(c) within the periods set forth in § 1.494 and § 1.495."*

WARNING: *Where the items are those which can be submitted to complete the entry of the international application into*

CERTIFICATION UNDER 37 C.F.R. 1.10*
(Express Mail label number is mandatory.)
(Express Mail certification is optional.)

I hereby certify that this correspondence and the documents referred to as attached therein are being deposited with the United States Postal Service on this date September 26, 2000, in an envelope as "Express Mail Post Office to Addressee," Mailing Label Number EL699731680US, addressed to the: Assistant Commissioner for Patents, Washington, D.C. 20231.

Jennifer Rashkin
(type or print name of person mailing paper)

Signature of person mailing paper

WARNING: *Certificate of mailing (first class) or facsimile transmission procedures of 37 C.F.R. 1.8 cannot be used to obtain a date of mailing or transmission for this correspondence.*

***WARNING:** *Each paper or fee filed by "Express Mail" must have the number of the "Express Mail" mailing label placed thereon prior to mailing. 37 C.F.R. 1.10(b). "Since the filing of correspondence under § 1.10 without the Express Mail mailing label thereon is an oversight that can be avoided by the exercise of reasonable care, requests for waiver of this requirement will not be granted on petition." Notice of Oct. 24, 1996, 60 Fed. Reg. 56,439, at 56,442.*

(Transmittal Letter to the United States Elected Office (EO/US)—page 1 of 8)

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the national phase are subsequent to 30 months from the priority date the application is still considered to be in the international state and if mailing procedures are utilized to obtain a date the express mail procedure of 37 C.F.R. §1.10 must be used (since international application papers are not covered by an ordinary certificate of mailing - See 37 C.F.R. §1.8.

NOTE: Documents and fees must be clearly identified as a submission to enter the national state under 35 USC 371 otherwise the submission will be considered as being made under 35 USC 111. 37 C.F.R. § 1.494(j).

1. Applicant herewith submits to the United States Elected Office (EO/US) the following items under 35 U.S.C. 371:
- a. [X] This express request to immediately begin national examination procedures (35 U.S.C. 371(f)).
 - b. [X] The U.S. National Fee (35 U.S.C. 371(c)(1)) and other fees (37 C.F.R. § 1.492) as indicated below:

09647026.110600

2. Fees

CLAIMS FEE	(1) FOR	(2) NUMBER FILED	(3) NUMBER EXTRA	(4) RATE	(5) CALCULATIONS
[]*	TOTAL CLAIMS	24- 20 =	4	x \$ 18.00 =	\$ NOT PAID
	INDEPENDENT CLAIMS	1- 3 =		x \$ 78.00 =	
	MULTIPLE DEPENDENT CLAIM(S) (if applicable) + \$260.00				
BASIC FEE**	<p>[] U.S. PTO WAS INTERNATIONAL PRELIMINARY EXAMINATION AUTHORITY Where an International preliminary examination fee as set forth in § 1.482 has been paid on the international application to the U.S. PTO: [] and the international preliminary examination report states that the criteria of novelty, inventive step (non-obviousness) and industrial activity, as defined in PCT Article 33(2) to (4) have been satisfied for all the claims presented in the application entering the national stage (37 CFR 1.492(a)(4)) \$96.00 and the above requirements are not met (37 CFR 1.492(a)(1)) \$670.00</p> <p>[X] U.S. PTO WAS NOT INTERNATIONAL PRELIMINARY EXAMINATION AUTHORITY Where no international preliminary examination fee as set forth in § 1.482 has been paid to the U.S. PTO, and payment of an international search fee as set forth in § 1.445(a)(2) to the U.S. PTO: [] has been paid (37 CFR 1.492(a)(2)) \$690.00 [] has not been paid (37 CFR 1.492(a)(3)) \$970.00 [X] where a search report on the international application has been prepared by the European Patent Office or the Japanese Patent Office (37 CFR 1.492(a)(5)) \$840.00</p>				
	Total of above Calculations				= \$ 840.00
SMALL ENTITY	Reduction by 1/2 for filing by small entity, if applicable. Affidavit must be filed. (note 37 CFR 1.9, 1.27, 1.28)				-
	Subtotal				= \$ 840.00
	Total National Fee				= \$ 840.00
	Fee for recording the enclosed assignment document \$40.00 (37 CFR 1.21(h)). (See Item 13 below). See attached "ASSIGNMENT COVER SHEET".				
TOTAL	Total Fees enclosed				\$ 840.00

*See attached Preliminary Amendment Reducing the Number of Claims.

- i. ☒ [X] A check in the amount of \$840.00 to cover the above fees is enclosed.
ii. ☐ [] Please charge Account No. _____ in the amount of \$ _____.
A duplicate copy of this sheet is enclosed.

****WARNING:** "To avoid abandonment of the application the applicant shall furnish to the United States Patent and Trademark Office not later than the expiration of 30 months from the priority date: * * * (2) the basic national fee (see § 1.492(a)). The 30-month time limit may not be extended." 37 C.F.R. § 1.495(b).

WARNING: If the translation of the international application and/or the oath or declaration have not been submitted by the applicant within thirty (30) months from the priority date, such requirements may be met within a time period set by the Office. 37 C.F.R. § 1.495(b)(2). The payment of the surcharge set forth in § 1.492(e) is required as a condition for accepting the oath or declaration later than thirty (30) months after the priority date. The payment of the processing fee set forth in § 1.492(f) is required for acceptance of an English translation later than thirty (30) months after the priority date. Failure to comply with these requirements will result in abandonment of the application. The provisions of § 1.136 apply to the period which is set. Notice of Jan. 3, 1993, 1147 O.G. 29 to 40.

3. ☒ [X] A copy of the International application as filed (35 U.S.C. 371(c)(2)):

NOTE: Section 1.495 (b) was amended to require that the basic national fee and a copy of the international application must be filed with the Office by 30 months from the priority date to avoid abandonment "The International Bureau normally provides the copy of the international application to the Office in accordance with PCT Article 20. At the same time, the International Bureau notifies applicant of the communication to the Office. In accordance with PCT Rule 47.1, that notice shall be accepted by all designated offices as conclusive evidence that the communication has duly taken place. Thus, if the applicant desires to enter the national stage, the applicant normally need only check to be sure the notice from the International Bureau has been received and then pay the basic national fee by 30 months from the priority date." Notice of Jan. 7, 1993, 1147 O.G. 29 to 40, at 35-36. See item 14c below.

- a. ☐ [] is transmitted herewith.
b. ☐ [] is not required, as the application was filed with the United States Receiving Office.
c. ☒ [X] has been transmitted
i. ☒ [X] by the International Bureau.
Date of mailing of the application (from form PCT/IB/308): _____.
ii. ☐ [] by applicant on _____.
Date

4. ☒ [X] A translation of the International application into the English language (35 U.S.C. 371(c)(2)):

- a. ☐ [] is transmitted herewith.
b. ☒ [X] is not required as the application was filed in English.
c. ☐ [] was previously transmitted by applicant on _____.
Date
d. ☐ [] will follow.

5. ☒ Amendments to the claims of the International application under PCT Article 19 (35 U.S.C. 371(c)(3)):

NOTE: The Notice of January 7, 1993 points out that 37 C.F.R. § 1.495(a) was amended to clarify the existing and continuing practice that PCT Article 19 amendments must be submitted by 30 months from the priority date and this deadline may not be extended. The Notice further advises that: "The failure to do so will not result in loss of the subject matter of the PCT Article 19 amendments. Applicant may submit that subject matter in a preliminary amendment filed under section 1.121. In many cases, filing an amendment under section 1.121 is preferable since grammatical or idiomatic errors may be corrected." 1147 O.G. 29-40, at 36.

- a. ☐ are transmitted herewith.
b. ☐ have been transmitted.
i. ☐ by the International Bureau.
ii. ☐ Date of mailing of the amendment (from form PCT/IB/308): _____
by applicant on _____
Date
c. ☒ have not been transmitted as
i. ☒ applicant chose not to make amendments under PCT Article 19.
Date of mailing of Search Report (from form PCT/ISA/210): June 10, 1999.
ii. ☐ the time limit for the submission of amendments has not yet expired.
The amendments or a statement that amendments have not been made
will be transmitted before the expiration of the time limit under PCT
Rule 46.1.
6. ☒ A translation of the amendments to the claims under PCT Article 19 (38 U.S.C. 371(c)(3)):
a. ☐ is transmitted herewith.
b. ☐ is not required as the amendments were made in the English language.
c. ☒ has not been transmitted for reasons indicated at point 5(c) above.
7. ☒ A copy of the international examination report (PCT/IPEA/409)
☒ is transmitted herewith.
☐ is not required as the application was filed with the United States Receiving Office.
8. ☐ Annex(es) to the international preliminary examination report
a. ☐ is/are transmitted herewith.
b. ☐ is/are not required as the application was filed with the United States Receiving Office.
9. ☐ A translation of the annexes to the international preliminary examination report
a. ☐ is transmitted herewith.
b. ☐ is not required as the annexes are in the English language.

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10. ☒ An oath or declaration of the inventor (35 U.S.C. 371(c)(4)) complying with 35 U.S.C. 115
- a. ☐ was previously submitted by applicant on _____ Date
- b. ☐ is submitted herewith, and such oath or declaration
- i. ☐ is attached to the application.
- ii. ☐ identifies the application and any amendments under PCT Article 19 that were transmitted as stated in points 3(b) or 3(c) and 5(b); and states that they were reviewed by the inventor as required by 37 C.F.R. 1.70.
- c. ☒ will follow.

Other document(s) or information included:

11. ☒ An International Search Report (PCT/ISA/210) or Declaration under PCT Article 17(2)(a):
- a. ☒ is transmitted herewith.
- b. ☐ has been transmitted by the International Bureau.
Date of mailing (from form PCT/IB/308): _____
- c. ☐ is not required, as the application was searched by the United States International Searching Authority.
- d. ☐ will be transmitted promptly upon request.
- e. ☐ has been submitted by applicant on _____ Date
12. ☒ An Information Disclosure Statement under 37 C.F.R. 1.97 and 1.98:
- a. ☐ is transmitted herewith.
Also transmitted herewith is/are:
☐ Form PTO-1449 (PTO/SB/08A and 08B).
☐ Copies of citations listed.
- b. ☒ will be transmitted within THREE MONTHS of the date of submission of requirements under 35 U.S.C. 371(c).
- c. ☐ was previously submitted by applicant on _____ Date
13. ☐ An assignment document is transmitted herewith for recording.

A separate ☐ "COVER SHEET FOR ASSIGNMENT (DOCUMENT) ACCOMPANYING NEW PATENT APPLICATION" or ☐ FORM PTO 1595 is also attached.

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14. ☒ Additional documents:
- a. ☐ Copy of request (PCT/RO/101)
 - b. ☒ International Publication No. WO 99/50823
 - i. ☒ Specification, claims and drawing
 - ii. ☐ Front page only
 - c. ☒ Preliminary amendment (37 C.F.R. § 1.121)
 - d. ☐ Other
- _____
- _____
- _____
15. ☒ The above checked items are being transmitted
- a. ☒ before 30 months from any claimed priority date.
 - b. ☐ after 30 months.
16. ☐ Certain requirements under 35 U.S.C. 371 were previously submitted by the applicant on _____, namely:
- _____
- _____
- _____

AUTHORIZATION TO CHARGE ADDITIONAL FEES

WARNING: *Accurately count claims, especially multiple dependent claims, to avoid unexpected high charges if extra claims are authorized.*

NOTE: *"A written request may be submitted in an application that is an authorization to treat any concurrent or future reply, requiring a petition for an extension of time under this paragraph for its timely submission, as incorporating a petition for extension of time for the appropriate length of time. An authorization to charge all required fees, fees under § 1.17, or all required extension of time fees will be treated as a constructive petition for an extension of time in any concurrent or future reply requiring a petition for an extension of time under this paragraph for its timely submission. Submission of the fee set forth in § 1.17(a) will also be treated as a constructive petition for an extension of time in any concurrent reply requiring a petition for an extension of time under this paragraph for its timely submission." 37 C.F.R. § 1.136(a)(3).*

NOTE: *"Amounts of twenty-five dollars or less will not be returned unless specifically requested within a reasonable time, nor will the payer be notified of such amounts; amounts over twenty-five dollars may be returned by check or, if requested, by credit to a deposit account." 37 C.F.R. § 1.26(a).*

☒ The Commissioner is hereby authorized to charge the following additional fees that may be required by this paper and during the entire pendency of this application to Account No. 12-0425.

☒ 37 C.F.R. 1.492(a)(1), (2), (3), and (4) (filing fees)

WARNING: *Because failure to pay the national fee within 30 months without extension (37 C.F.R. § 1.495(b)(2)) results in abandonment of the application, it would be best to always check the above box.*

☐ 37 C.F.R. 1.492(b), (c) and (d) (presentation of extra claims)

NOTE: *Because additional fees for excess or multiple dependent claims not paid on filing or on later presentation must only be paid or these claims cancelled by amendment prior to the expiration of the time period set for response by*

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the PTO in any notice of fee deficiency (37 C.F.R. § 1.492(d)), it might be best not to authorize the PTO to charge additional claim fees, except possible when dealing with amendments after final action.

- ☒ 37 C.F.R. 1.17 (application processing fees)
☒ 37 C.F.R. 1.17(a)(1)-(5)(extension fees pursuant to § 1.136(a).
☒ 37 C.F.R. 1.18 (issue fee at or before mailing of Notice of Allowance, pursuant to 37 C.F.R. 1.311(b))

NOTE: Where an authorization to charge the issue fee to a deposit account has been filed before the mailing of a Notice of Allowance, the issue fee will be automatically charged to the deposit account at the time of mailing the notice of allowance. 37 C.F.R. § 1.311(b).

NOTE: 37 C.F.R. 1.28(b) requires "Notification of any change in loss of entitlement to small entity status must be filed in the application . . . prior to paying, or at the time of paying . . . issue fee." From the wording of 37 C.F.R. § 1.28(b): (a) notification of change of status must be made even if the fee is paid as "other than a small entity" and (b) no notification is required if the change is to another small entity.

- ☐ 37 C.F.R. § 1.492(e) and (f) (surcharge fees for filing the declaration and/or filing an English translation of an International Application later than 30 months after the priority date).


SIGNATURE OF PRACTITIONER

William R. Evans

(type or print name of practitioner)

Reg. No.: 25,858

Tel. No.: (212) 708-1930

c/o Ladas & Parry

P.O. Address

26 WEST 61st STREET

NEW YORK, NY 10023

Customer No.:

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

[] In re application of:

Application No.:

Filed:

For:

Group No.:

Examiner:

[] *Patent No.:

Issue Date:

*NOTE: Insert name(s) of inventor(s) and title also for patent. Where statement is with respect to a maintenance fee payment, also insert application number and filing date, and add Box M. Fee to address.

STATEMENT CLAIMING SMALL ENTITY STATUS (37 CFR 1.9(c-f) and 1.27(b-d))

With respect to the invention described in

[] the specification filed herewith.

[X] application no. PCT/GB99/00938, filed 25 March 1999.

[] patent no. _____ issued _____.

I. IDENTIFICATION AND RIGHTS AS A SMALL ENTITY

I hereby state that I am

(complete either (a), (b), (c) or (d) below)

(a) Independent Inventor

[X] a below named independent inventor, and that I qualify as an independent inventor, as defined in 37 CFR 1.9(c), for purposes of paying reduced fees under Sections 41(a) and (b) of Title 35, United States Code, to the Patent and Trademark Office.

(b) Noninventor Supporting a Claim by Another

[] making this statement to support a claim by

for a small entity status for purposes of paying reduced fees under Sections 41(a) and (b) of Title 35, United States Code. I hereby state that I would qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees under Sections 41(a) and (b) of Title 35, United States Code, if I had made the above identified invention.

(c) Small Business Concern

[] the owner of the small business concern identified below:

[] an official of the small business concern empowered to act on behalf of the concern identified below:

Name of Concern _____
Address of Concern _____

_____ and
that the above identified small business concern qualifies as a small business concern, as defined in 13 CFR 121.3-18, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees under Sections 41(a) and (b) of Title 35, United States Code, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

(d) Non-Profit Organization

☐ an official empowered to act on behalf of the nonprofit organization identified below:

Name of Organization _____
Address of Organization _____

TYPE OF ORGANIZATION

- ☐ University or Other Institution of Higher Education
☐ Tax Exempt Under Internal Revenue Service Code (26 USC 501(a) and 501(c) (3))
☐ Nonprofit Scientific or Educational Under Statute of State of the United States of America
(Name of State _____)
(Citation of Statute _____)
☐ Would Qualify as Tax Exempt Under Internal Revenue Service Code (26 USC 501(a) and 501(c) (3)), if Located in the United States of America
☐ Would Qualify as Nonprofit Scientific or Educational Under Statute of State of the United States of America, if Located in the United States of America
(Name of State _____)
(Citation of Statute _____)

and that the nonprofit organization identified above qualifies as a nonprofit organization, as defined in 37 CFR 1.9(e), for purposes of paying reduced fees under Sections 41(a) and (b) of Title 35, United States Code.

II. OWNERSHIP OF INVENTION BY DECLARANT

I hereby state that rights under contract or law remain with and/or have been conveyed to the above identified

☒ person ☐ concern ☐ organization
(item (a) or (b) above) (item (c) above) (item (d) above)

EXCEPT, that if the rights held are not exclusive, each individual, concern or organization having rights to the invention is listed below* and no rights to the invention are held (1) by any person who could not be classified as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, (2) any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or (3) a nonprofit organization under 37 CFR 1.9(e).

- ☐ no such person, concern, or organization
☐ person, concerns or organizations listed below*

*NOTE: Separate statements are required from each named person, concern or organization having rights to the invention as to their status as small entities. (37 CFR 1.27)

Full Name _____
Address _____
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

Full Name _____
Address _____
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

III. ACKNOWLEDGEMENT OF DUTY TO NOTIFY PTO OF STATUS CHANGE

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

IV. DECLARATION

(check the following item, if desired)

NOTE: The following verification statement need not be made in accordance with the rules published on October 10, 1997, 62 Fed. Reg. 52131, effective December 1, 1997.

NOTE: "The presentation to the Office (whether by signing, filing, submitting, or later advocating) of any paper by a party, whether a practitioner or non-practitioner, constitutes a certification under § 10.18(b) of this chapter. Violations of § 10.18(b)(2) of this chapter by a party, whether a practitioner or non-practitioner, may result in the imposition of sanctions under § 10.18(c) of this chapter. Any practitioner violating § 10.18(b) may also be subject to disciplinary action. See §§ 10.18(d) and 10.23(c)(15)." 37 CFR 1.4(d)(2).

- ☐ I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

V. SIGNATURES

(complete only (e) or (f) below)

(e)

NOTE: All inventors must sign the statement.

DOMINIC LE PREVOST

Name of Inventor



Signature of Inventor

Date: 26/9/2000

Name of Inventor

Date: _____

Signature of Inventor

Name of Inventor

Date: _____

Signature of Inventor

(add lines for any additional inventors who must sign)

or

(f)

NOTE: The title of the person signing on behalf of a concern or nonprofit organization should be specified.

Name of Person Signing _____

Title of Person _____
(if signing on behalf of a concern or non-profit organization)

Address of Person Signing _____

SIGNATURE _____ DATE _____

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Dominic LE PREVOST

For: ACOUSTIC HORN

Attorney Docket No.: U 012964-2

Box PCT
Assistant Commissioner for Patents
Washington, D.C. 20231
ATTENTION: EO/US

Sir:

PRELIMINARY AMENDMENT

Please amend the above identified application as follows:

IN THE CLAIMS

Please cancel claims 1-24.

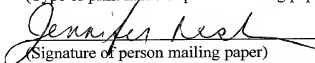
Please add the following claims:

CERTIFICATE UNDER 37 1.10

I hereby certify that this paper is being deposited with the United States Postal Service on this date SEPTEMBER 26, 2000 in an envelope as "EXPRESS MAIL POST OFFICE TO ADDRESSEE" Mailing Label Number EL699731680US addressed to the: Assistant Commissioner for Patents, Washington, D.C. 20231

Jennifer Rashkin

(Type or print name of person mailing paper)



(Signature of person mailing paper)

NOTE: Each paper or fee referred to as enclosed herein has the number of the "EXPRESS MAIL" mailing label place thereon prior to mailing 37 CFR 1.16(b).

EL699731680US

25. An acoustic horn comprising a tapered structure having a base end and an apex end, the tapered structure being formed from a sheet of foldable material, and comprising a wall member having a plurality of fold lines defining the edges of a plurality of juxtaposed panels, characterised in that at least two of the fold lines are arcuate to form a first non-planar panel bound by said arcuate fold lines, both the base end and the apex end being open.
26. An acoustic horn according to claim 25, wherein the structure further comprises an internal channel within the acoustic horn.
27. An acoustic horn according to claim 25, wherein the tapered structure has a cross-sectional area which increases non-linearly with distance from the apex end.
28. An acoustic horn as claimed in claim 25, wherein at least two of the arcuate fold lines converge towards the apex end to contribute to a general convergence of the tapered structure.
29. An acoustic horn as claimed in claim 25, wherein at least two of the arcuate fold lines converge towards the base end of the structure such that the at least two arcuate fold lines converge to a point at or near the base end.
30. An acoustic horn as claimed in claim 25, wherein the first non-planar panel is outwardly concave and has mirror symmetry about a longitudinal axial plane substantially perpendicular to the non-planar panel.
31. An acoustic horn as claimed in claim 25, wherein the wall member includes a second non-planar panel, opposed to the first non-planar panel, which second non-planar panel is outwardly concave.

32. An acoustic horn as claimed in claim 31, wherein the first and second non-planar panels are of different size from each other and one or both converge to a point proximate the base end.

33. An acoustic horn as claimed in claim 31, wherein fold lines are disposed in at least the first non-planar panel, thereby allowing the tapered structure to be folded flat.

34. An acoustic horn as claimed in claim 31, wherein the wall member includes two further opposing non-planar panels, joining the first and second non-planar panels, and being generally outwardly convex.

35. An acoustic horn as claimed in claim 31, wherein the first and second non-planar panels are generally elliptically shaped.

36. An acoustic horn as claimed in claim 31, wherein the first and second non-planar panels are generally petal-shaped.

37. An acoustic horn as claimed in claim 31, wherein the first and second non-planar panels are generally trapezoidal shaped with the non-parallel sides being arcuate.

38. An acoustic horn as claimed in claim 26, wherein the internal channel is integrally formed with the tapered structure.

39. An acoustic horn as claimed in claim 26, wherein the internal channel is formed by folding a portion of the sheet of foldable material.

40. An acoustic horn as claimed in claim 26, wherein at least one orifice or notch is formed in a wall of the internal channel to support a vibrating element.

41. An acoustic horn as claimed in claim 40, wherein the vibrating element is formed from one of a thin paper, plastics and metal sheet for being forced into vibration when a user
5 modulates a flow of air into the horn.

42. An acoustic horn as claimed in claim 41, wherein the one of a thin paper, plastic and metal sheet is laminated with laminating material and the laminating material extends over
10 the orifice or notch to form the vibrating element.

43. An acoustic horn as claimed in claim 25, wherein the tapered structure generally comprises two flat planar portions being joined at opposed edges of a flat structure.
15

44. An acoustic horn as claimed in claim 43, wherein a single line of adhesion is provided such that the two flat planar portions can be held together when formed from one or more sheets of foldable material.
20

45. An acoustic horn as claimed in claim 43, wherein the line of adhesion is a straight line.

46. An acoustic horn as claimed in claim 44, wherein the line
25 of adhesion is located along an edge of the flat structure.

47. An acoustic horn as claimed in claim 25, wherein the tapered structure comprises at least first, second and third wall portions, wherein the wall portions co-operate in use, to
30 form a channel, and wherein the second portion, intermediate the first and third portion, is bounded by two arcuate curves, and has an outwardly concave surface.

48. A blank of foldable sheet material which has fold lines
35 whereby the blank can be folded to the acoustic horn of claim 25.

Respectfully submitted,



WILLIAM R. EVANS
LADAS & PARRY
26 WEST 61ST STREET
NEW YORK, NEW YORK 10023
REG.NO.25858(212)708-1930

00647025-41000

This invention relates to an acoustic horn which, amongst other things, may be used as a musical instrument. Such a structure can be formed from a sheet of foldable material. The invention also relates to a blank of foldable sheet material for forming the tapered structure.

In the field of acoustics, horns are generally classified according to their geometrical shape. Figure 1 shows, for example, a pyramidal horn with an open rectangular base, and a tubular wall comprising four planar trapezoidal shaped panels. The apex of the pyramid is truncated to form a throat section through which acoustic energy may be transmitted or received.

Figure 2 shows a conical horn in which the tubular wall forms a continuous panel circumscribing an acoustic channel within. The geometrical structures shown in Figures 1 and 2 are characterised in that their cross-sectional area increases linearly with the distance from their throat. These structures, by virtue of their shape, may be formed from a single sheet of foldable material. The blank for the pyramidal horn is shown in Figure 4, with the four panels labelled 41, three fold lines labelled 42, and a tab for holding the structure together labelled 43.

Figure 3 shows a sectoral horn in which one of the sets of two opposing panels are planar and parallel, and the other set of opposing panels are flared. This particular structure is characterised in that the cross-sectional area increases non-linearly with the distance from the throat. This non-linearity of the cross-sectional area improves the efficiency of the horn structure in channelling acoustic energy to or from the throat. However, whereas the shape of the structures of Figures 1 and 2 enable them to be formed from a sheet of foldable material, the geometrical structure of Figure 3 must be formed by fastening together the separate panels.

French Patents FR-A-2763736 (published Nov. 27, 1999), FR-A-319520 and US 1330364 disclose conical horns as illustrated in Fig. 2 of the present application.

German Patent DE-A-2040787 discloses a generally conical trumpet with panel structure but no arcuate structure. UK Patent GB-A-519577 discloses a container structure with non planar elements but not an acoustic structure or arcuate features. French Patent FR-A-1066361 discloses a carton with arched panels but not an acoustic horn. US Patent US-A-4166468 discloses a carton with a arcuate panel but with sealed ends and there is no disclosure of acoustic properties.

According to a first aspect of the present invention there is provided an acoustic horn comprising a tapered structure having a base end and an apex end, the tapered structure being formed from a sheet of foldable material, and comprising a wall member having a plurality of fold lines defining the edges of a plurality of juxtaposed panels, characterised in that at least two of the fold lines are arcuate to form a non-planar panel bound by said arcuate fold lines both base end and apex end being open.

A structure in accordance with the present invention has an advantage that it by using curved fold lines instead of straight fold lines as used in the pyramidal horn, a panel or panels of the structure may be made non-planar. The use of curved interfaces between adjacent panels enhances the strength of the structure, in particular its ability to withstand shearing and crushing forces.

The structure has a base end and an apex end, also referred to as the mouth and the throat respectively. Both of these ends must be open to provide an acoustic horn.

specifically an internal channel is provided to enhance the acoustic properties.

In a preferred embodiment, at least one pair of the curved fold lines converge towards the apex end, and may contribute to the general convergence of the tapered structure i.e. the decrease in the cross-sectional area towards the throat.

Preferably at least one pair of the curved fold lines converges towards the base end of the tubular wall. In this case, the curved fold lines may converge to a point at or near the base end.

Ideally, at least one non-planar panel has a concave external appearance, and has mirror symmetry in a plane substantially perpendicular to the panel.

Advantageously, the wall member may include a second non-planar panel, opposite the first non-planar panel, and also having a concave external appearance. The first and second panels may be of different size and one or both may stop short of the base. Advantageously fold lines may be disposed in the non-planar panels, thereby allowing the tapered structure to be folded flat. This is advantageous for transport and storage.

The wall member may include two further opposing non-planar panels, joining the first and second non-planar panels, and having a generally convex external appearance.

A preferred embodiment of the invention has first and second non-planar panels which are generally elliptically shaped. Alternatively, the first and second non-planar panels may be regarded as being generally petal shaped. In a further embodiment, the first and second non-planar panels may be regarded as being generally trapezoidal shaped with the non-parallel sides being curved.

The acoustic horn may advantageously have a cross-sectional area which varies non-linearly (generally increasing) with the distance from the throat.

5

An internal channel may be formed within the horn. The channel may carry a vibrating element. It is thus possible to form a kazoo within the horn.

- 10 Preferably the channel is integrally formed with the horn. The channel may be formed by folding a portion of the sheet of foldable material.

- 15 Advantageously at least one orifice or notch may be cut into a wall of the internal channel in order to support the vibrating element. The vibrating element may, for example, be formed from a thin paper, plastics or metal sheet and which can be forced into vibration when a user modulates a flow of air into the horn with their own vocal cords. In a preferred
- 20 embodiment the foldable material is laminated and the laminating material extends over the orifice or notch to form the vibrating element. A tab can be left in the material of the orifice and removed prior to final assembly.

- 25 Advantageously a single line of adhesion may be provided for glue and/or sticky tape such that the tapered structure can be formed from the unfolded blank of material in a relatively easy folding operation. Advantageously the line of adhesion is a straight line.

30

- According to a second aspect of the present invention, there is provided a tapered structure comprising at least first, second and third wall portions, wherein the wall portions co-operate in use, to form a channel, and wherein the second
- 35 portion is intermediate the first and third portion, is bounded by two arcuate curves, and has an outwardly concave surface.

According to a third aspect of the present invention there is provided a sheet of material having three pairs of fold lines formed therein, wherein each pair of fold lines are arcuate and serve to define five portions, and in which the lines in each pair curve so as to define three tongue shaped portions, separated by intervening regions.

The present invention will further be described, by way of example, with reference to the accompanying drawings, in which:

Figures 1 to 4 are illustrative of the acoustic devices of the art.

Figure 1 is a perspective view of a pyramidal horn;

Figure 2 is a perspective view of a conical horn.

Figure 3 is a perspective view of a sectoral horn.

Figure 4 is a plan view of a blank for the pyramidal horn of Figure 1.

Figures 5a, 5b, 5c and 5d are views of a first embodiment of a tapered structure in accordance with the invention in various orientations;

Figure 6 is a perspective view of a second embodiment of a tapered structure in accordance with the invention;

Figure 7 is a plan view of a blank for the tapered structure of figure 6;

Figure 8 is a plan view of a blank for the tapered structure of Figures 5a, 5b, 5c and 5d;

Figures 9a and 9b are end and exploded views of the throat of a tapered structure constituting a third embodiment of the invention.

- 5 Figure 10 shows part of the blank for the tapered structure of Figures 9a and 9b;

- Figure 11 illustrates a blank for a fourth embodiment of the invention having a modified panel shape so as to define a
10 linear line of adhesion;

Figure 12 illustrates a blank of Figure 11 with a linear glue line in place;

- 15 Figure 13 illustrates a blank for a fifth embodiment of the invention, having a linear line of adhesion along one edge of the blank, with a glue line in place along the line of adhesion;

- 20 Figure 14 illustrates a portion of the blank for a modified version of the internal channel structure; and

Figure 15 illustrates a variation of the embodiment of Figure 13 viewed from the other side of the blank.

25

Referring to Figures 5a, 5b, 5c and 5d there is shown a horn structure which is formed by folding a sheet of material. The material may be any foldable material, such as paper, card, suitably thin sheet metal, or plastics.

30

The horn structure has a single wall which is wrapped around a channel or cavity, and joins back onto itself to form a hollow tube-like structure. The horn has an open base end 51, known as the mouth, having a relatively wide cross-sectional area.

- 35 The cross-sectional area of the channel decreases along the length of the horn, at least from pyramidal region 59, to an open truncated apex end 52, otherwise known as the throat of

the horn. The horn has first and second opposed concave surfaces 54 and 55, respectively. Each surface 54 and 55 is provided with respective longitudinally extending fold lines, as indicated by the chain lines 58. Thus the surface 54 is divided into portions 54a and 54b (see Fig. 8). The first concave surface 54 extends from the throat 52 to the mouth 51 of the horn. The second concave surface 55 only extends part of the way towards the mouth 51. This results in the creation of the pyramidal region 59 where the second concave surface and the opposed side walls 60 and 61 come together. This pyramidal region imparts structural stability into the horn.

The horn can be moved between a flat and a 3-dimensional state at will. This does involve some stressing of the material of the horn, which "clicks" into its final state as the horn is constructed from the flat to the 3-dimensional form. This sudden change into the final 3-dimensional state also enhances the structural rigidity of the horn and inhibits the horn from inadvertently returning to the flat state. Of course, the horn may be provided without the fold lines 58 if it is not to be folded flat.

Referring also to Figure 6, there is shown a blank for the horn structure of Figures 5a to 5d. The blank is delimited by an outline 71, and has four fold lines 72, 73, 74, 75 which divide the blank into three generally elliptical areas 76, 78, 80, albeit being truncated at one end, and first and second intermediate areas 77, 79. There is also a flap or tab section 81 joined by a fold line to the first intermediate area 77. After folding the blank along the fold lines, the blank is then wrapped around onto itself such that the outer elliptical areas 76 and 80 coincide or overlap, and the flap section 81 overlaps with the area 79. With the blank folded and wrapped the horn structure of Figures 5a to 5d is formed, and may remain in that form by gluing or fastening both the overlapping elliptical areas 76 and 80, and the overlapping flat 81 and area 79 to one another in a known manner. The

elliptical area 78, and the coincident elliptical areas 76 and 80 form two opposing concave panels of the horn. These panels are joined by two opposing convex panels formed by the intermediate areas 77, 79. The curved nature of the fold lines, which convergence towards the base end, combined with the arc or sector like symmetrical shape of the overall blank produce a horn structure which is flared i.e. the cross-sectional area of the horn increases non-linearly with the distance from the throat. This improves the acoustic performance of the horn.

The first generally elliptical area may be provided as only a half elliptical area by removing a portion 76' therefrom, thus causing the edge of the blank to be delimited by line 71' in that portion of the blank.

Figure 6 shows an alternative embodiment of the horn structure in accordance with the invention, in which the base end is symmetric. The blank for this horn structure is shown in Figure 7, with like references referring to like features. This blank does not include the flap or tab 81 of the Figure 8 embodiment.

It is possible to form a musical instrument, such as a kazoo, integrally with the horn. As shown in Figures 9a and 9b, an internal channel 100 can extend forwardly within the throat section of the horn. Figures 9a and 9b show the horn in a state intermediate its flat and fully constructed forms in order that the separation between the various elements can be more clearly shown. The channel comprises first and second walls 102 and 104 which are hingedly attached together along a longitudinally extending line 106. The walls 102 and 104 do not include fold lines therein. In its fully constructed state, the top of the channel 100 is defined by a further wall 108 which is composed of two wall portions 108a and 108b separated by a fold line. In the fully constructed state the walls 108a and 108b follow the same path, at least partially,

as the panel 54 of the completed horn. The wall portions 108a and 108b extend immediately from the fold line 58. At the apex the walls 102 and 104 are separated from the first and second intermediate regions 77 and 79 by first and second triangular portions 112 and 114 which serve to form end walls which, in use, close the throat of the horn and ensure that air flow into the interior of the horn has to occur via the internal channel 100. One of the walls 102 and 104 of the internal channel carries a flap 116 which, in use, is adhered to the other one of the walls 102 and 104 thereby ensuring that the channel is formed. Additionally, one of the walls of the channel has an aperture or orifice formed therein for supporting a vibrating element 118 which forms the acoustically active part of the kazoo. The horn may be laminated to protect it and the laminating material, for example a plastic film, may extend over the aperture in the wall of the channel so as to form the vibrating element. In this Figure and the following Figures 7-14 the blank is viewed from the side bearing the plastic laminate.

The arcuate crease lines 72, 73, 74, 75 impart a tension and rigidity to the walls of the horn which decreases the absorption of vibrations by the walls and enhances the application of the tapered structure as a noise maker or musical instrument.

In a further modification, panels 130 and 131 are provided to define part of the path of a glue line 150 which runs diagonally across the blank, as shown in Figure 12. The panels 108a and 108b are also modified so as to form foldable portions 132 and 134, respectively, which lie on the path of the glue line.

In use, the end portion 140 is folded under the remainder of the horn, and the portions 132 and 134 are also folded back, thereby providing means for adhering the end portion 140 in position. The flap 138 is adhered to the corresponding

portion 138a of the glue line. Similarly flap 136 is adhered to portion 136a, flap 130 to portion 130a, and flap 131 to portion 131a.

5 Thus the completed structure can be easily assembled, especially so when the glue line can be provided by double sided adhesive tape. The tape may be cut away in those portions where it is not overlying the blank.

10 Another embodiment having an adhesive line is shown in Figure 13 in which the channel section 100 is shorter than in the embodiment of Figures 10 to 12, and the adhesive line 150a is along one edge of the blank eliminating flap 138 rather than crossing the channel section as in Figure 12. This has
15 advantages in the manufacture of the blank and the assembly of the tapered structure.

In Figure 14 there is shown a variation of the internal channel structure of Figure 13. The glue line 150b runs
20 across the corner of flap 102 to create a glue area corresponding to a foldable corner 151 on flap 104a eliminating flap 136 from the embodiment of Figures 13 and 14. This simplifies construction.

25 Small holes 144 as shown in Figure 11 may also be provided through which a cord or similar may be threaded (either before or after construction of the horn) to create a carrying loop, which may be a neck cord.

30 In Figure 15 the blank is viewed from the unlaminated side. As will be seen this results in a folded structure in which the flap 104b carries a flap 116a the edge of which is visible after assembly.

35 It is thus possible to form a structurally complex shape, comprising a kazoo and an acoustic horn from a single sheet of material, with the exclusion of the vibrating element, and

only requiring three fastenings, for example by glue, to be made. Furthermore, the instrument can fold flat for easy transport.

- 5 It will be evident in view of the foregoing that various modifications may be made within the scope of the present invention. For example, there may be more than two, e.g. 3 or 4, concave elliptical panels distributed around the tubular wall member.

CLAIMS:

1. An acoustic horn comprising a tapered structure having a base end (51) and an apex end (52), the tapered structure being formed from a sheet of foldable material, and comprising a wall member having a plurality of fold lines (72,73,74,75) defining the edges of a plurality of juxtaposed panels (76,78,80), characterised in that at least two of the fold lines (73,74) are arcuate to form a non-planar panel (55) bound by said arcuate fold lines both base end (51) and apex end (52) being open.

2. An acoustic horn according to claim 1 wherein the structure further comprises an internal channel (100) within the acoustic horn.

3. An acoustic horn according to either of claims 1 and 2 wherein the tapered structure has a cross-sectional area which increases non-linearly with distance from the apex end (52).

4. An acoustic horn as claimed in any one of claims 1 to 3, wherein at least one pair of the arcuate fold lines converges towards the apex end (52) to contribute to a general convergence of the tapered structure.

5. An acoustic horn as claimed in any one of claims 1 to 4, wherein at least one pair of the arcuate fold lines (73,74) converges towards the base end (51) of the structure such that the arcuate fold lines (73, 74) converge to a point (59) at or near the base end (51).

6. An acoustic horn as claimed in any one of the preceding claims, wherein the non-planar panel (55) is outwardly concave and has mirror symmetry about a longitudinal axial plane substantially perpendicular to the panel (55).

7. An acoustic horn as claimed in any one of claims 1 to 6, wherein the wall member includes a second non-planar panel (54), opposed to the first non-planar panel (55), which second non-planar panel (54) is also outwardly concave.

8. An acoustic horn as claimed in any one of the preceding claims, wherein the first and second panels (54,55) are of different size from each other and one or both converge to a point (59) proximate the base end (51).

9. An acoustic horn as claimed in any of the preceding claims, wherein fold lines (58) are disposed in the at least one non-planar panel (54,55), thereby allowing the tapered structure to be folded flat.

10. An acoustic horn as claimed in any of the preceding claims, wherein the wall member includes two further opposing non-planar panels (77,79), joining the first and second non-planar panels (54,55), and being generally outwardly convex.

11. An acoustic horn as claimed in any of the preceding claims, wherein the first and second non-planar panels (54,55) are generally elliptically shaped.

12. An acoustic horn as claimed in any of claims 1 to 10, wherein the first and second non-planar panels (54,55) are generally petal-shaped.

13. An acoustic horn as claimed in any one of claims 1 to 10, wherein the first and second non-planar panels (54,55) are generally trapezoidal shaped with the non-parallel sides (71,72,73,74) being arcuate.

14. An acoustic horn as claimed in any one of claims 2 to 13, wherein the internal channel (100) is integrally formed with the tapered structure.

15. An acoustic horn as claimed in any one of claims 2 to 14, wherein the internal channel (100) is formed by folding a portion of the sheet of foldable material.

5 16. An acoustic horn as claimed in any one of claims 2 to 15, wherein at least one orifice or notch is formed in a wall of the internal channel (100) to support a vibrating element (118).

10 17. An acoustic horn as claimed in claim 16, wherein the vibrating element (118) is formed from a thin paper, plastics or metal sheet for being forced into vibration when a user modulates a flow of air into the horn.

15 18. An acoustic horn as claimed in claims 16 and 17, wherein the foldable material is laminated and the laminating material extends over the orifice or notch to form the vibrating element (118).

20 19. An acoustic horn as claimed in any of the preceding claims where the structure generally comprises two flat planar portions being joined at opposed edges of the flat structure.

25 20. An acoustic horn as claimed in claim 19, wherein a single adhesive line (13) is provided such that the two flat planar portions can be held together when formed from one or more sheets of foldable material.

30 21. An acoustic horn as claimed in claim 19, wherein the line of adhesion (130) is a straight line.

22. An acoustic horn as claimed in claims 20 or 21, wherein the adhesive line is located along an edge of the flat structure.

35

23. An acoustic horn as claimed in any of the preceding claims, wherein the tapered structure comprises at least

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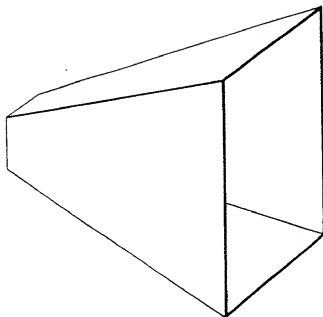


FIG. 1

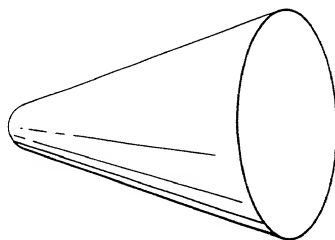


FIG. 2

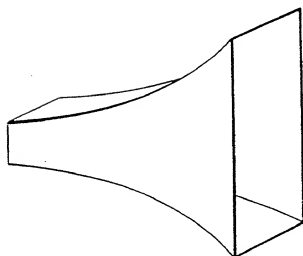


FIG. 3

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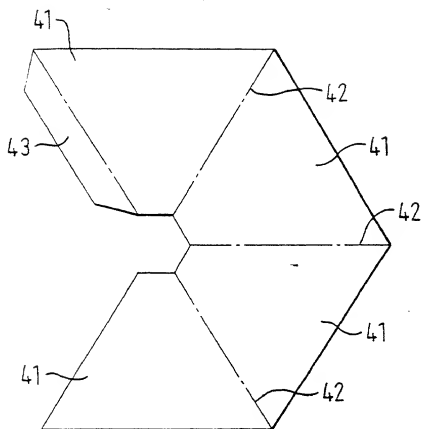


FIG. 4

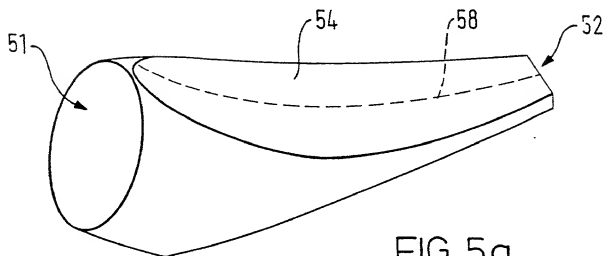
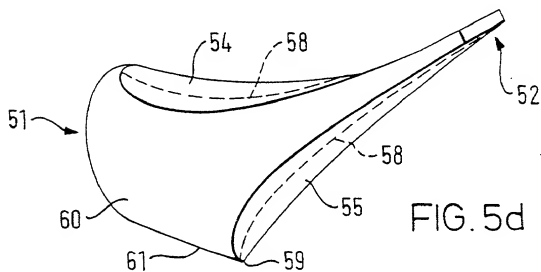
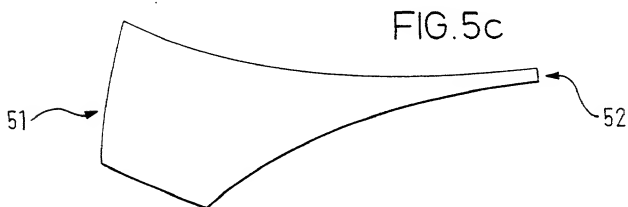
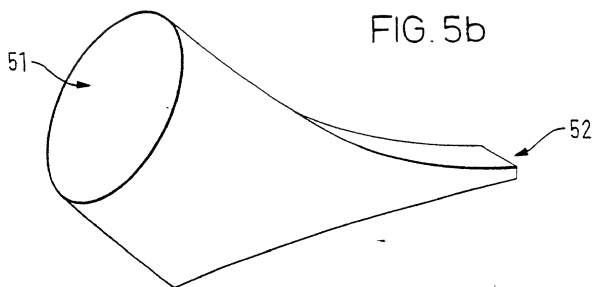


FIG. 5a

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FIG. 6

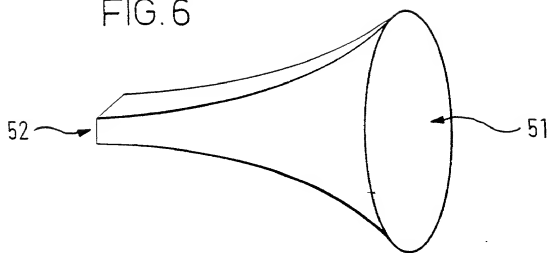
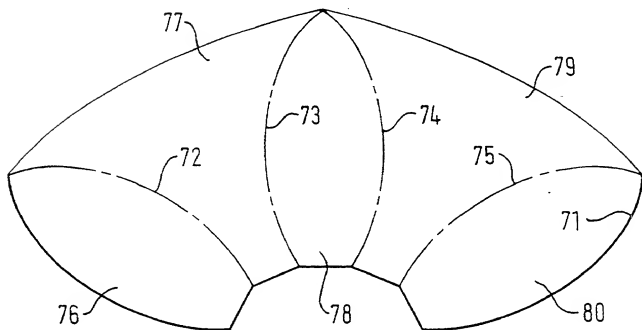
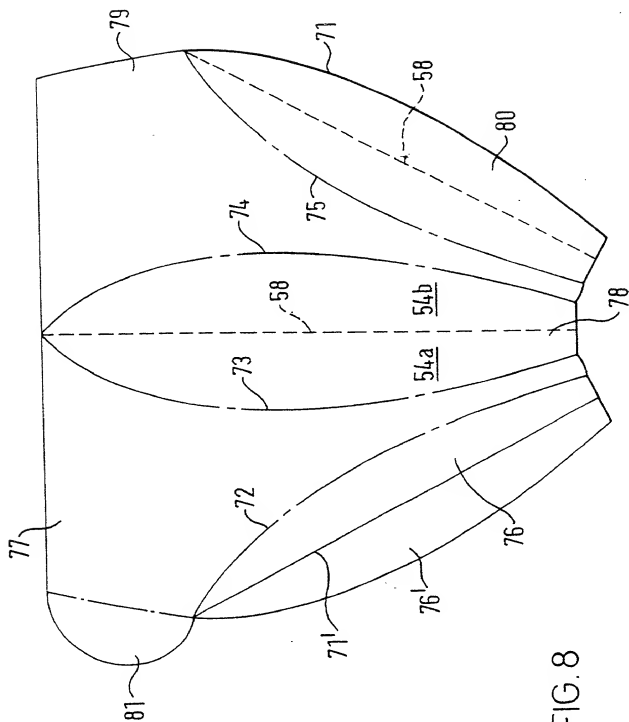


FIG. 7



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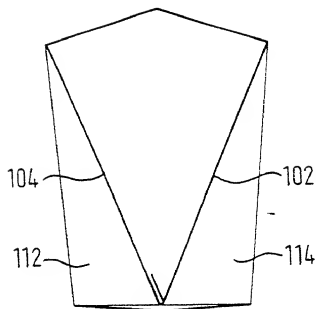


FIG. 9a

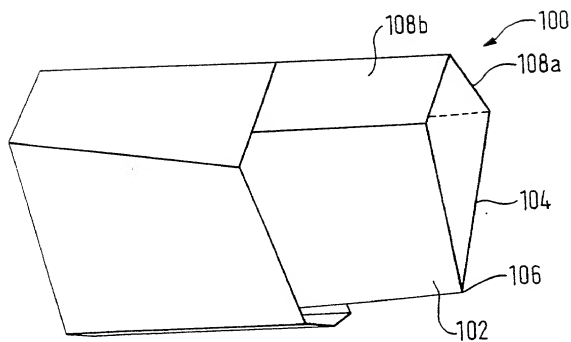


FIG. 9b

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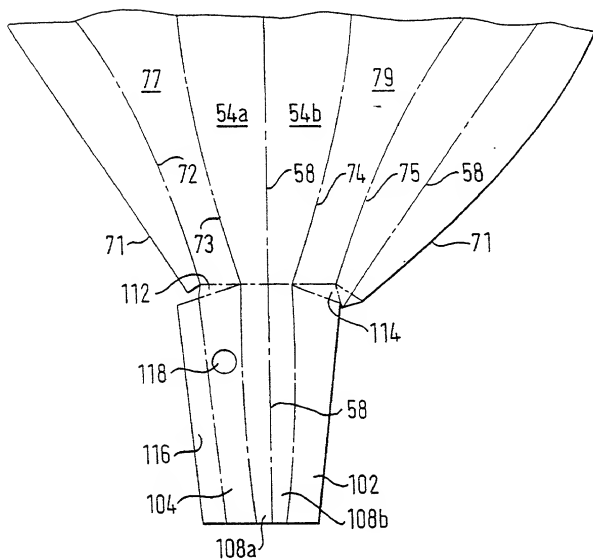


FIG. 10

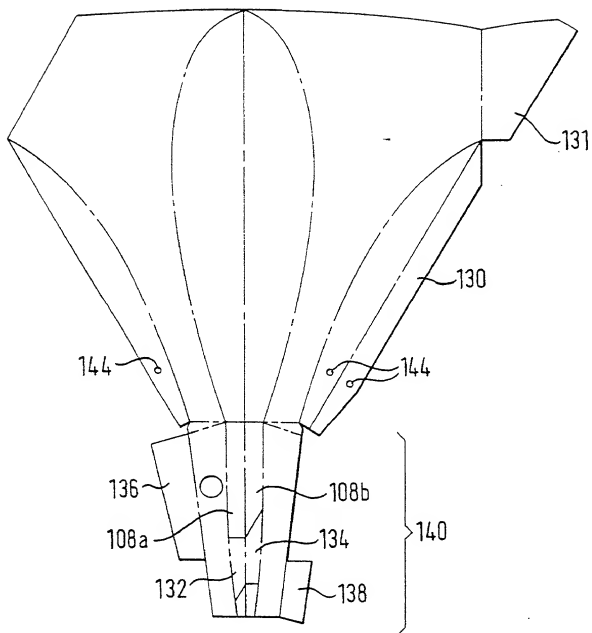


FIG. 11

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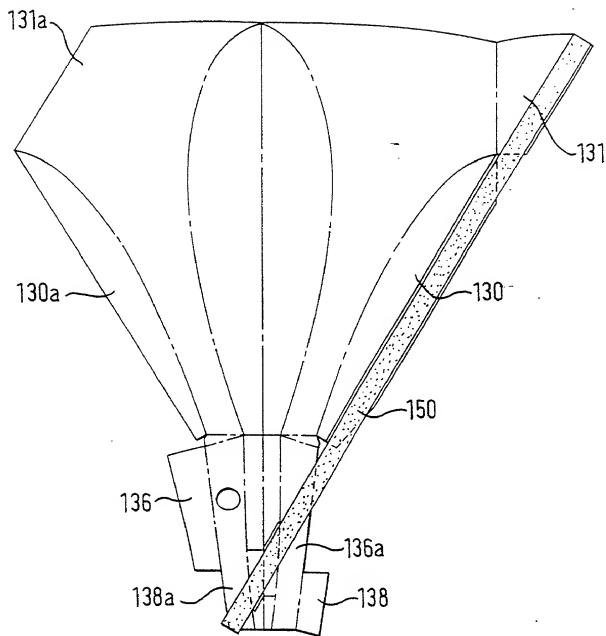


FIG. 12

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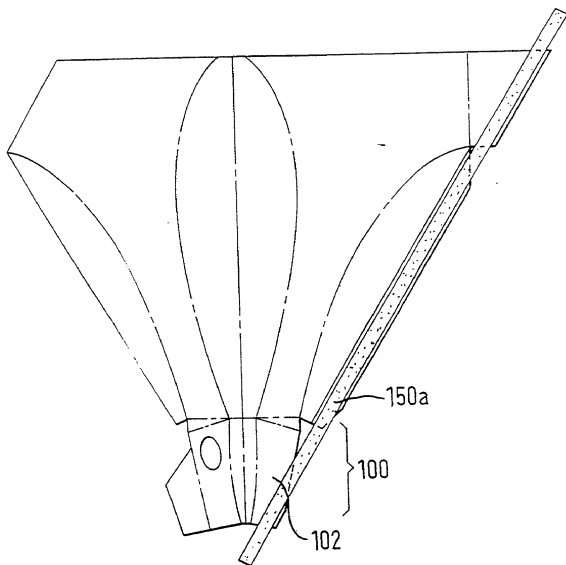


FIG. 13

11/12

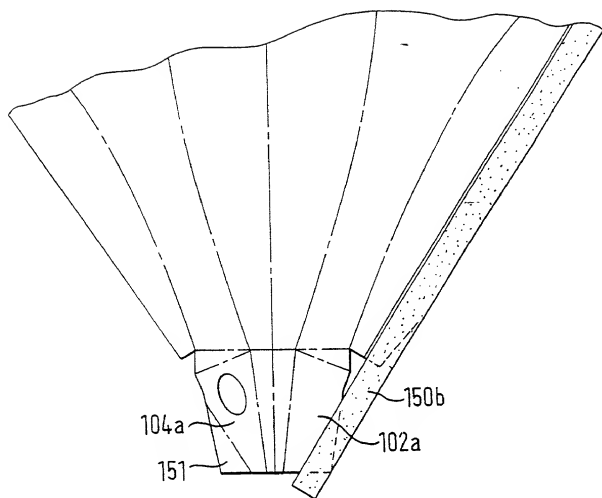


FIG. 14

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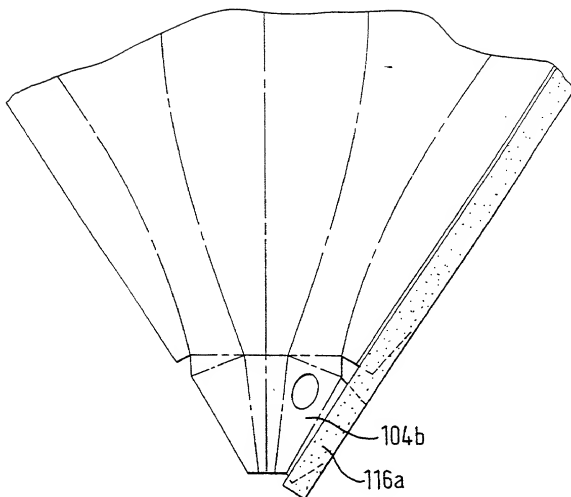


FIG. 15

Optional Customer No. Bar Code →

COMBINED DECLARATION AND POWER OF ATTORNEY

(ORIGINAL, DESIGN, NATIONAL STAGE OF PCT, SUPPLEMENTAL, DIVISIONAL,
CONTINUATION, OR C-I-P)

As a below named inventor, I hereby declare that:

TYPE OF DECLARATION

This declaration is of the following type:

(check one applicable item below)

- ☐ original.
☐ design.

NOTE: With the exception of a supplemental oath or declaration submitted in a reissue, a supplemental oath or declaration is not treated as an amendment under 37 CFR 1.312 (Amendments after allowance). M.P.E.P. Section 714.16, 7th Ed.

- ☐ supplemental.

NOTE: If the declaration is for an International Application being filed as a divisional, continuation or continuation-in-part application, do not check next item; check appropriate one of last three items.

- ☒ national stage of PCT.

NOTE: If one of the following 3 items apply, then complete and also attach ADDED PAGES FOR DIVISIONAL, CONTINUATION OR C-I-P.

NOTE: See 37 C.F.R. Section 1.63(d) (continued prosecution application) for use of a prior nonprovisional application declaration in the continuation or divisional application being filed on behalf of the same or fewer of the inventors named in the prior application.

- ☐ divisional.
☐ continuation.

NOTE: Where an application discloses and claims subject matter not disclosed in the prior application, or a continuation or divisional application names an inventor not named in the prior application, a continuation-in-part application must be filed under 37 C.F.R. Section 1.53(b) (application filing requirements-nonprovisional application).

- ☐ continuation-in-part (C-I-P).

INVENTORSHIP IDENTIFICATION

WARNING: *If the inventors are each not the inventors of all the claims, an explanation of the facts, including the ownership of all the claims at the time the last claimed invention was made, should be submitted.*

My residence, post office address and citizenship are as stated below, next to my name. I believe that I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter that is claimed, and for which a patent is sought on the invention entitled:

TITLE OF INVENTION
ACOUSTIC HORN

SPECIFICATION IDENTIFICATION

The specification of which:

(complete (a), (b), or (c))

(a) ☐ is attached hereto.

NOTE: *"The following combinations of information supplied in an oath or declaration filed on the application filing date with a specification are acceptable as minimums for identifying a specification and compliance with any one of the items below will be accepted as complying with the identification requirement of 37 C.F.R. Section 1.63:*

"(1) name of inventor(s), and reference to an attached specification which is both attached to the oath or declaration at the time of execution and submitted with the oath or declaration on filing;

"(2) name of inventor(s), and attorney docket number which was on the specification as filed; or

"(3) name of inventor(s), and title which was on the specification as filed."

Notice of July 13, 1995 (1177 O.G. 60).

(b) ☐ was filed on _____, [☐] as Application No. _____
[☐] and was amended on _____ (if applicable).

NOTE: *Amendments filed after the original papers are deposited with the PTO that contain new matter are not accorded a filing date by being referred to in the declaration. Accordingly, the amendments involved are those filed with the application papers or, in the case of a supplemental declaration, are those amendments claiming matter not encompassed in the original statement of invention or claims. See 37 C.F.R. Section 1.67.*

NOTE: *"The following combinations of information supplied in an oath or declaration filed after the filing date are acceptable as minimums for identifying a specification and compliance with any one of the items below will be accepted as complying with the identification requirement of 37 C.F.R. Section 1.63:*

- (A) application number (consisting of the series code and the serial number, e.g., 08/123,456);
- (B) serial number and filing date;
- (C) attorney docket number which was on the specification as filed;
- (D) title which was on the specification as filed and reference to an attached specification which is both attached to the oath or declaration at the time of execution and submitted with the oath or declaration; or
- (E) title which was on the specification as filed and accompanied by a cover letter accurately identifying the application for which it was intended by either the application number (consisting of the series code and the serial number, e.g., 08/123,456), or serial number and filing date. Absent any statement(s) to the contrary, it will be presumed that the application filed in the PTO is the application which the inventor(s) executed by signing the oath or declaration.

M.P.E.P. Section 601.01(a), 7th ed.

- (c) ☒ was described and claimed in PCT International Application No. PCT/GB99/00938 filed on 25 March 99 and as amended under PCT Article 19 on _____ (if any).

SUPPLEMENTAL DECLARATION (37 C.F.R. Section 1.67(b))

(complete the following where a supplemental declaration is being submitted)

☐ I hereby declare that the subject matter of the

☐ attached amendment

☐ amendment filed on _____.

was part of my/our invention and was invented before the filing date of the original application, above identified, for such invention.

ACKNOWLEDGMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information, which is material to patentability as defined in 37, Code of Federal Regulations, Section 1.56,

(also check the following items, if desired)

☐ and which is material to the examination of this application, namely, information where there is a substantial likelihood that a reasonable Examiner would consider it important in deciding whether to allow the application to issue as a patent, and

☐ in compliance with this duty, there is attached an information disclosure statement, in accordance with 37 C.F.R. Section 1.98.

PRIORITY CLAIM (35 U.S.C. Section 119(a)-(d))

NOTE: "The claim to priority need be in no special form and may be made by the attorney or agent if the foreign application is referred to in the oath or declaration as required by Section 1.63. The claim for priority and the certified copy of the foreign application specified in 35 U.S.C. Section 119(b) must be filed in the case of an interference (Section 1.630), when necessary to overcome the date of a reference relied upon by the examiner, when specifically required by the examiner, and in all other situations, before the patent is granted. If the claim for priority or the certified copy of the foreign application is filed after the date the issue fee is paid, it must be accompanied by a petition requesting entry and by the fee set forth in Section 1.17(i). If the certified copy is not in the English language, a translation need not be filed except in the case of interference; or when necessary to overcome the date of a reference relied upon by the examiner; or when specifically required by the examiner, in which event an English language translation must be filed together with a statement that the translation of the certified copy is accurate." 37 C.F.R. Section 1.55(a).

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d) of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed.

(complete (d) or (e))

- (d) ☐ no such applications have been filed.
(e) ☒ such applications have been filed as follows.

NOTE: Where item (c) is entered above and the International Application which designated the U.S. itself claimed priority check item (e), enter the details below and make the priority claim.

**PRIOR FOREIGN/PCT APPLICATION(S) FILED WITHIN 12 MONTHS
(6 MONTHS FOR DESIGN) PRIOR TO THIS APPLICATION
AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. SECTION 119(a)-(d)**

COUNTRY (OR INDICATE IF PCT)	APPLICATION NUMBER	DATE OF FILING DAY, MONTH, YEAR	PRIORITY CLAIMED UNDER 35 USC 119
GB	9806713.5	27/03/98	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
GB	9818642.2	26/08/98	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
GB	9823529.4	27/10/98	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO

CLAIM FOR BENEFIT OF PRIOR U.S. PROVISIONAL APPLICATION(S)
(35 U.S.C. Section 119(e))

I hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below:

PROVISIONAL APPLICATION NUMBER	FILING DATE
____/____	____
____/____	____
____/____	____

CLAIM FOR BENEFIT OF EARLIER U.S./PCT APPLICATION(S)
UNDER 35 U.S.C. SECTION 120

[] The claim for the benefit of any such applications are set forth in the attached ADDED PAGES TO COMBINED DECLARATION AND POWER OF ATTORNEY FOR DIVISIONAL, CONTINUATION OR CONTINUATION-IN-PART (C-I-P) APPLICATION.

ALL FOREIGN APPLICATION(S), IF ANY, FILED MORE THAN 12 MONTHS
(6 MONTHS FOR DESIGN) PRIOR TO THIS U.S. APPLICATION

NOTE: If the application filed more than 12 months from the filing date of this application is a PCT filing forming the basis for this application entering the United States as (1) the national stage, or (2) a continuation, divisional, or continuation-in-part, then also complete ADDED PAGES TO COMBINED DECLARATION AND POWER OF ATTORNEY FOR DIVISIONAL, CONTINUATION OR C-I-P APPLICATION for benefit of the prior U.S. or PCT application(s) under 35 U.S.C. Section 120.

POWER OF ATTORNEY

I hereby appoint the following practitioner(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

(list name and registration number)

JOSEPH H. HANDELMAN, 26179

JOHN RICHARDS, 31053

RICHARD J. STREIT, 25765

PETER D. GALLOWAY, 27885

IAN C. BAILLIE, 24090

THOMAS F. PETERSON, 24790

RICHARD P. BERG, 28145

JULIAN H. COHEN, 20302

WILLIAM R. EVANS 25858

JANET I. CORD, 33778

CLIFFORD J. MASS, 30086

CYNTHIA R. MILLER, 34678

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(Check the following item, if applicable)

- [] I hereby appoint the practitioner(s) associated with the Customer Number provided below to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith.
- [] Attached, as part of this declaration and power of attorney, is the authorization of the above-named practitioner(s) to accept and follow instructions from my representative(s).

NOTE: "Special care should be taken in continuation or divisional applications to ensure that any change of correspondence address in a prior application is reflected in the continuation or divisional application. For example, where a copy of the oath or declaration from the prior application is submitted for a continuation or divisional application filed under 37 CFR 1.53(b) and the copy of the oath or declaration from the prior application designates an old correspondence address, the Office may not recognize, in the continuation or divisional application, the change of correspondence address made during the prosecution of the prior application. Applicant is required to identify the change of correspondence address in the continuation or divisional application to ensure that communications from the Office are mailed to the current correspondence address. 37 CFR 1.63(d)(4)." Section 601.03, M.P.E.P., 7th Ed.

SEND CORRESPONDENCE TO

DIRECT TELEPHONE CALLS TO:
(Name and telephone number)

Ladas & Parry
26 West 61st Street
New York, N.Y. 10023

(complete the following if applicable)

Since this filing is a [] continuation [] divisional there is attached hereto a Change of Correspondence Address so that there will be no question as to where the PTO should direct all correspondence.

DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

SIGNATURE(S)

NOTE: Carefully indicate the family (or last) name, as it should appear on the filing receipt and all other document.

NOTE: Each inventor must be identified by full name, including the family name, and at least one given name without abbreviation together with any other given name or initial, and by his/her residence, post office address and country of citizenship. 37 C.F.R. Section 1.63(a)(3).

NOTE: Inventors may execute separate declarations/oaths provided each declaration/oath sets forth all the inventors. Section 1.63(a)(3) requires that a declaration/oath, inter alia, identify each inventor and prohibits the execution of separate declarations/oaths which each sets forth only the name of the executing inventor. 62 Fed. Reg. 53,131, 53,142, October 10, 1997.

Full name of sole or first inventor

DOMINIC LE PREVOST
(Given Name) (Middle Initial or Name) Family (Or Last Name)

Inventor's signature [Signature]

Date 26/9/2000 Country of Citizenship GREAT BRITAIN

Residence TANYARD FARM, LOWER WEAR, NR AXBRIDGE, SOMERSET BS26 2JG, GREAT BRITAIN

Post Office Address AS ABOVE G B 7

Full name of second joint inventor, if any

(Given Name) (Middle Initial or Name) Family (Or Last Name)

Inventor's signature

Date Country of Citizenship

Residence

Post Office Address

Full name of third joint inventor, if any

(Given Name) (Middle Initial or Name) Family (Or Last Name)

Inventor's signature

Date Country of Citizenship

Residence

Post Office Address

(check proper box(es) for any of the following added page(s)
that form a part of this declaration)

- ☐ **Signature** for fourth and subsequent joint inventors. *Number of pages added* _____

* * *

- ☐ **Signature** by administrator(trix), executor(trix) or legal representative for deceased or incapacitated inventor. *Number of pages added* _____

* * *

- ☐ **Signature** for inventor who refuses to sign or cannot be reached by person authorized under 37 C.F.R. Section 1.47. *Number of pages added* _____

* * *

- ☐ Added page for **signature** by one joint inventor on behalf of deceased inventor(s) where legal representative cannot be appointed in time. (37 C.F.R. Section 1.47)

* * *

- ☐ Added pages to combined declaration and power of attorney for divisional, continuation, or continuation-in-part (C-I-P) application.

☐ Number of pages added _____

* * *

- ☐ Authorization of practitioner(s) to accept and follow instructions from representative.

(If no further pages form a part of this Declaration,
then end this Declaration with this page and check the following item)

- ☐ This declaration ends with this page.